Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

August 22, 1997	)	
In the Matter of	)	
	)	ET Docket No. 93-62
Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation	)	

COMMENTS OF MARJORIE LUNDQUIST
ON THE
REQUEST FOR EXTENSION OF COMPLIANCE DEADLINE
BY AMERITECH MOBILE COMMUNICATIONS, INC.
TOGETHER WITH A DISCUSSION OF
GENERAL HYGIENIC PRINCIPLES OF MICROWAVE RADIATION USE

Ameritech Mobile Communications, Inc. (Ameritech) recently requested that the Commission issue a blanket extension of the deadline for complying with its new radiofrequency (RF) radiation rules adopted in August, 1996, in the above-captioned docket.

I support Ameritech's request for a blanket extension of the compliance deadline because, in my professional judgment, the Commission's new RF radiation rules offer no substantial additional benefit over the Commission's old rules. For this reason, a short delay (of less than a year) in complying with the Commission's new RF radiation rules will not be harmful to the public health to any appreciable degree, in my professional judgment.

My support of Ameritech's request for a blanket extension of the deadline for compliance with the Commission's new RF radiation rules should *not* be construed as support for either of the Commission's RF radiation rules, however. Rather, I consider that both are grossly *inadequate*—but the old and new rules seem to be about *equally* inadequate, hence it makes little or no difference to the public health which one is being enforced.

As I indicated a year ago in my Petition for Reconsideration, the Commission's old and new rules protect against *thermal* hazards to health, whereas the public at present requires protection against *nonthermal* health hazards from wireless telecommunications transmitters, which neither the old nor the new Commission rules provides. In comparison to the Commission's old rules, its new rules *do* provide an increased margin of safety against *thermal* hazards to health. But because there is no evidence that the Commission's old rules were inadequate with respect to *thermal* health hazards, there is no reason to believe that the public will enjoy any appreciable benefit from enforcement of the Commission's new RF radiation rules. Therefore I do not expect that a delay of less than a year in the enforcement of the Commission's new rules will be harmful to the public health to any appreciable degree, for which reason I am able to support the Ameritech request.

Further Discussion

The only area in which the logic I have employed above could be questioned is with respect to the response of electrosensitive individuals to wireless telecommunications transmitters; specifically, the response of electrosensitive residents of New York City to the start-up of Omnipoint's PCS service in that city in mid-November, 1996. It is possible that electrosensitive individuals might have responded less strongly, had the Commission's new RF radiation rules been in effect at the time that Omnipoint's system began operation.

Omnipoint employs a digital signal operating at a nominal frequency of ~1.9 GHz. One might therefore argue that digital systems operating near or above a nominal frequency of 1.9 GHz should be *exempted* from the extension of the deadline for compliance that Ameritech has requested.

I do *not* make this argument, for the following practical reasons.

Electrosensitive individuals have already fled New York City, and are not present to enjoy any reduction in hazard which might attend compliance with the Commission's new rules. Furthermore, it seems unlikely that any reduction in hazard to electrosensitive individuals would have been great enough to make a substantial difference. In other words, I strongly suspect that, had the Commission's new rules been in effect in New York City at the beginning of November, 1996, electrosensitive residents of that city would *still* have found their environment intolerable, and so would have fled the city to become microwave refugees!

An argument can be made that individuals who are *not* electrosensitive will nevertheless experience harm to their health (which takes a lengthy period of time to manifest itself) as a result of exposure to digital signals from microwave transmitters operating at a nominal frequency near 1.9 GHz under the Commission's old rules, and that they will therefore be harmed to some degree by the extension of time for compliance with the Commission's new RF radiation rules requested by Ameritech, if this extension is a blanket one.

I think it likely that the same conditions of exposure to electromagnetic fields that are intolerable to electrosensitive individuals are also hazardous to the health of individuals who are *not* electrosensitive, under chronic exposure conditions. It is not known whether any hazard to health is increased or decreased by switching from the Commission's old rules to its new rules, but it is certainly possible that the Commission's new rules *may* reduce whatever hazard to health exists, compared to its old rules.

However, I judge the difference in health hazard to non-electrosensitive individuals between

the Commission's old and new rules (if any such difference exists) to be small, compared to the hazard posed by the Commission's new rules; this, together with the fact that the extension of time sought is less than a year, causes me to conclude that any public health benefit that might result from *exempting* that portion of the wireless telecommunications industry employing digital signals at a nominal frequency near or above 1.9 GHz from an otherwise blanket extension of the compliance deadline is insufficiently great to warrant such an exemption.

For these *practical* reasons, I therefore support the Ameritech request for a blanket extension of the deadline for complying with the Commission's new RF radiation rules *without* any exception being made for the type of exposure that has been associated with alleged hazards to health: exposure to the digital signals from a transmitter operating at a nominal frequency of ~1.9 GHz.

Bioelectromagnetic Hygiene Principles for the Use of Microwave Radiation

There are individuals who are fighting the wireless telecommunications industry because they consider it hazardous. They are likely to be quite dismayed by my support of Ameritech's request for a blanket extension of the deadline for compliance with the Commission's new RF radiation rules.

Industrial hygienists specialize in the safe use of hazardous agents. Bioelectromagnetic hygiene—my specialty—is a specialized type of industrial hygiene, meaning that I have developed principles for the safe use of radiofrequency and microwave radiation. As I have not presented these fundamental principles heretofore in any submission to the Commission, I take the opportunity to do so now for microwave radiation.

Three Basic Principles for Safe Use of Microwave Radiation

1. Microwave radiation may be safely used so long as it remains contained within a leak-free waveguide, and living creatures remain *outside* the waveguide.
2. Microwave radiation which cannot be utilized within a waveguide should be configured into a beam, because this geographically limits the region of hazard to the space occupied by the beam itself, plus a region surrounding the transmitter within which the side lobes (as well as the main beam) are likely to pose some degree of hazard.
3. Microwave radiation should ***never*** be *broadcast!*

   Broadcasting spreads the hazard from a single transmitter over the largest possible region of space, which maximizes the microwave radiation hazard to the health of living creatures in the vicinity of the transmitter, under conditions of long-term exposure. It also provides an opportunity for simultaneous exposure of living creatures to microwave radiation from multiple transmitters, which greatly complicates the challenge of quantitating the nonthermal health hazard, because consideration must be given not only to each separate radiation source, but also to interactions among them. The more transmitters there are, the greater the importance of the interactions among them.

The wireless telecommunications industry is *based* on the broadcasting of microwave radiation! It is therefore *inherently* hazardous to health: it violates the third principle listed above.

The Telecommunications Act of 1996 mandated the rapid development of an *inherently hazardous* industry: the wireless telecommunications industry. It *maximized* the public health hazard posed by this industry in several ways.

• It mandated the proliferation of multiple transmitters in a given geographic area. [The pur-

pose was to ensure competition, in order to create a free market in wireless telecommunications services, thereby keeping prices down.]

- It permitted use of a variety of frequencies, including those well within the microwave range. ["The higher the frequency, the higher the hazard" is a rough rule of thumb.]
- It permitted the use of digital as well as analog transmissions. [It has long been known that pulsed signals are considerably more hazardous than exposure to a continuous-wave field. The reason seems to be that a pulsed signal contains a very wide spread of frequencies on either side of, and at much lower intensities than, the nominal frequency. Digital signals are, in essence, pulsed signals. Both the spread of frequencies (via Fourier decomposition) and their reduced intensity seem to contribute to the increased health hazard that digital signals pose, in comparison with analog signals. (The thermal hazard is *reduced* by reducing the radiation intensity; in contrast, the nonthermal hazard seems to be *increased* by reducing the radiation intensity, at least at the levels currently in use for wireless telecommunications transmissions.)]

An even greater level of wireless telecommunications service could have been delivered at a considerably reduced hazard to the public health, had this service been regulated and offered at a single frequency across the entire United States (with the frequency carefully chosen for minimum adverse health effect) and employing only an analog—not a digital—signal. The public would then have been subjected to only a single base transmitter (except at the edge of cells) in any geographic area, and the restriction to an analog signal at a frequency below 1 GHz would surely have prevented the increase in the homeless population represented by the New York City *microwave refugees* who were forced to abandon their homes last November. (Furthermore, if any of the human deaths alleged to have been the result of proximity to a

base transmitter were in fact caused by being too close to a digital transmitter operating at 1.9 GHz, *human lives could have been saved* by taking such a carefully regulated approach!)

Notice that such an approach would not only have been safer in terms of the public health, but it would have provided much better value to the users of this service, in terms of the breadth of service offered. By using a single technology throughout the whole country, any cellular telephone user in one part of the country would have been able to use that same cellular phone in any other part of the country where base transmitters were in operation—something that is *not* true at present!

This approach would also have maximized the profit potential to the companies that provided the service, assuming they were regulated much as a utility is today, by providing some protection from cut-throat competition.

The big loser would have been the U.S. treasury, which would not have been able to "sell" so much of the electromagnetic spectrum, and so would not have "earned" so much money! Congress, in choosing to create an inherently hazardous industry—the wireless telecommunications industry—and in deciding to structure it in a way that maximized federal revenues, with no regard at all for the fact that this also maximized the hazard to the public health, showed that it is fundamentally *fascist!* It is prepared to operate the federal government as a business whose interests are basically at odds with those of its customers—those governed—and to employ the power of the federal government to brutally suppress all opposition! It disdains the fiduciary responsibilities of any government that claims to govern with the consent of the governed, and in reality is an enslaving monolith of naked power! In short, it is a government at war with those it governs! This is why I consider that passage of the Tele-

communications Act of 1996 was, in essence, a declaration of war by the Congress of the United States against the American people!

Of course, my opinions are of no relevance to the Federal Communications Commission, which has the duty of carrying out the laws passed by Congress. And my profession of bioelectromagnetic hygiene is concerned with the safe use of a hazardous (or potentially hazardous) agent: the electromagnetic field. The challenge of the Telecommunications Act of 1996 to a bioelectromagnetic hygienist, then, is to determine how to protect the public health while operating an inherently hazardous industry in a maximally hazardous manner. To this challenge there is really only one answer: if the surface of the earth is to be blanketed with radiation that is hazardous to human health under conditions of lifetime exposure, then mankind has no choice but to *abandon the surface of the earth* as his abode!

There are two directions in which mankind can depart the earth's surface: upward and downward. We could establish human colonies on the moon and Mars, where there are no wireless telecommunications towers at present; or we can move our cities underground. As anyone who owns land with a residence on it could extend that building below ground, living like moles is much the more accessible option for most people. (This is the scenario envisioned by science-fiction writers for the future of mankind in the event of a planet-wide nuclear war that leaves the surface of Planet Earth uninhabitable for millennia: mankind will dwell underground, with a succession of generations passing their entire lives below-ground.)

The only difference in the two scenarios of hazardous radiation rendering the earth's surface uninhabitable—nuclear war, and a ubiquitous wireless telecommunications industry employing microwave radiation—is that the former is capable of contaminating the surface of

the earth for an immense length of time (determined by the half-life of the radioactive elements formed), while the latter produces no material contamination at all, and can be made to vanish utterly within a few seconds, just by depriving the transmitters of power!

The *difficult* challenge is to determine how mankind can live safely *on* the surface of the earth when that region of space becomes increasingly filled with hazardous microwave radiation. At present, no one knows exactly how to do it. Indeed, it may be impossible of accomplishment.

In my personal view, wireless telecommunications base transmitters simply do not belong on the surface of Planet Earth. If we *must* have wireless telecommunications capability, I think the proper place for base transmitters is high overhead, on satellites circling the earth. Certainly this is the only safe place for base transmitters that emit digital, rather than analog, signals!

But Congress has mandated, via the Telecommunications Act of 1996, a broadcast microwave radiation hazard at the earth's surface throughout the United States of America, in opposition to the desires of the American people, who want a safe life above the ground in the traditional manner, and who never asked for a wireless telecommunications industry. So I have been trying, in my earlier submissions to the Federal Communications Commission, to provide the needed direction toward this objective. I am not at all certain that it is capable of accomplishment under the conditions that Congress has mandated.

I trust that this lengthy discussion explains why someone so hostile as I am to the Telecommunications Act of 1996, and to the Federal Communications Commission's old and new RF

radiation rules, can nevertheless in good conscience *support* Ameritech's request for a blanket extension of the deadline for complying with the Commission's new RF radiation rules.

Respectfully submitted,

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NOTE: Herewith, two dictionary definitions of *fascism:*

- any program for setting up a centralized autocratic national regime with severely nationalistic policies, exercising regimentation of industry, commerce and finance, rigid censorship, and forcible suppression of opposition

- any tendency toward or actual exercise of severe autocratic or dictatorial control

[Source: Webster's Third New International Dictionary of the English Language Unabridged
Editor-in-Chief: Philip Babcock Gove, Ph.D.
Springfield, MA: G. & C. Merriam Company, 1966; page 825.]